REMARKS

Responsive to the outstanding Office Action, applicant has carefully studied the Examiner's rejections and the comments relative thereto. Favorable reconsideration of the application is respectfully requested in light of the following detailed arguments.

After amendment, claims 30-39 are pending in this application. In this response, claims 30-31 and 35-39 have been amended, and claims 40-44 have been canceled. No new matter has been introduced by these amendments.

REJECTIONS UNDER 35 USC §112

Claims 30-39 were rejected under 35 USC §112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner notes that "operating at a quench pressure" fails to establish a sufficient relationship between the glass material and the method of processing steps necessary to be considered enabling for one of ordinary skill in the art. The Examiner goes on to note that these claims lack the necessary structural element of the quench.

The Examiner also notes that claims 30-39 are indefinite in that "the required standards" can vary from country to country, thus rendering the claims indefinite.

In response thereto, claims 30, 31 and 35-39 have been amended herein to include the structural element of the "quench" and to note the proper standard "ANSI Z26" that is referenced. It is known that ANSI Z26 is the "American National Standard for Safety Glazing Materials for Glazing Motor Vehicles and Motor Vehicle Equipment Operating on Land Highways". One skilled in the art would recognize this as the applicable standard in the United States. The "quench" was discussed in paragraph [0037] of the application as published and is thus included herein. The claims have thus been amended herein in a manner believed to comply with the requirements of 35 USC §112, second paragraph. It is therefore requested that this rejection be reconsidered and withdrawn.

REJECTIONS UNDER 35 USC §102

Claims 40-44 have been rejected under 35 USC §102 as being anticipated by Cheng (WO 91/07356). In response thereto, claims 40-44 have been canceled herein, thereby rendering the rejection thereagainst moot.

REJECTIONS UNDER 35 USC §103

Claims 30-39 and 44 were rejected under 35 USC §103 as being unpatentable over Cheng in view of Littleton. Claim 44 has been canceled herein thereby rendering the rejection thereagainst moot.

Before discussing the applied art in detail, applicants would like to point out features of the present invention, as claimed in independent claim 30. Claim 30 shows an improvement in a method of tempering a glazing comprised of boron-free glass having a magnesium oxide content of less than 2% by weight, a coefficient of thermal expansion greater than 93×10^{-7} per degree Centigrade and a Fracture Toughness of less than 0.72 $MPam^{1/2}$. The improvement comprises operating a quench at a quench pressure at least 20% less than the quench pressure required to temper a corresponding glazing of standard composition to the standard ANSI Z26 under otherwise similar conditions.

The Cheng (WO 01/07356 Al) reference fails to disclose a method of tempering a glazing of boron-free glass having a magnesium oxide content of less than 2 % by weight. Cheng addresses glass compositions for infrared and ultraviolet radiation absorbing green glass compositions (page 1, lines 7-8). There is no disclosure of a method of tempering such compositions. Insofar as there is an enabling disclosure of glass compositions in Cheng, on page 9, lines 13-23 and on page 10, lines 24-34 the glass compositions consist essentially of ingredients including about 3 to 4 % by weight of MgO and excluding boron. This concentration of Magnesium oxide is outside the range claimed in the present invention. Further, the specific compositions of examples 11 and 12 (at the bottom of page 16) and the green glass described on page 17, lines 32-27 are also boron-free and include 4.14 %, 3.97 % and 4.00 % MgO respectively.

Littleton (US 2,311,846) does not show a method of tempering a glazing of boron-free glass having a magnesium oxide content of less than 2 % by weight. The only compositions described in Littleton are in Table I at the bottom of page 2. Only example F is boron-free but this includes a "standard" amount of magnesium oxide (3.5 %) — the text immediately following the table indeed states that the glass in example F is a typical soda lime glass, which would be recognized by one skilled in the art as containing a higher concentration of MgO than claimed in the present invention.

The Examiner asserts that claims 30 to 39 are obvious over Cheng in view of Littleton. It is respectfully submitted that Cheng can not serve as the primary reference because there is no disclosure of a method of tempering a pane of glass, nor of the properties of thermal expansion or fracture toughness for boron-free glass having a magnesium oxide content of less than 2 %. Any arguments regarding the inherency of these properties in the glasses of Cheng are now moot because said glasses are not boron-free and they contain at least 3 % magnesium oxide, both factors of which are excluded by the present invention as claimed in claim 30.

Littleton does not provide any subject matter which would overcome these deficiencies of Cheng. Littleton admittedly discloses a method of tempering a pane of glass, and that *"the degree of temper obtained under specific chilling conditions is controlled primarily by the thermal expansion coefficient of the glass"* (page 1, right-hand column, lines 14-17). However Littleton makes no suggestion that boron-free glasses (of which there is only 1 example (F) given, with nothing pointing specifically to that example) having a magnesium oxide content of less than 2 % (of which there are examples, but not example (F)) which have values of thermal expansion coefficient and fracture toughness as claimed (the latter property not being disclosed at all) could or would be tempered using a quench pressure of (referring to the independent claims herein):

- at least 20 % less than the quench pressure required to temper a corresponding glazing of standard composition to standard ANSI Z26 under otherwise similar conditions (claim 30)
- not more than 12.5 kPa for 3 mm glass (claim *35)*

- not more than 10 kPa for 4 mm glass (claim 36)
- not more than 6 kPa for 5 mm glass (claim 37)
- at least 10 % less than the quench pressure required to temper a corresponding glazing of standard composition to standard ANSI Z26 under otherwise similar conditions (claim 38).

In fact, it is respectfully submitted that the tempering method taught in Littleton is based around specific chilling conditions (i.e. quench *temperatures).* The paragraph bridging from the bottom of the left hand column to the top of the right hand column on page 1 discusses, subsequent to heating the glass, "subjecting it to a relatively severe chilling. . . at a temperature low enough to cause the surface layers of glass to set. . .then immediately subjecting the glass to a temperature lying well above the lower temperature for a somewhat longer period of time". There is no teaching in Littleton of quench *pressures,* especially of being able to reduce the quench pressure for glasses of certain compositions, as per the amended claims of the present application.

Even if the combined teachings of Cheng and Littleton could yield the present invention (which applicant asserts is not the case), it is respectfully submitted that there is no motivation for one skilled in the art to combine the teachings of Cheng and Littleton. Cheng teaches a green glass composition with IR and UV absorbing properties. Littleton addresses the tensile/compressive stresses of a glass article, and adjusting these in a manner to achieve a desired glass product. These references belong in completely different technical fields and were it not for disclosure of the present invention, there would be no reason to bring these two documents together. The Examiner can only be applying hindsight analysis to do so. Thus claims 30 to 39 are not obvious over Cheng in view of Littleton.

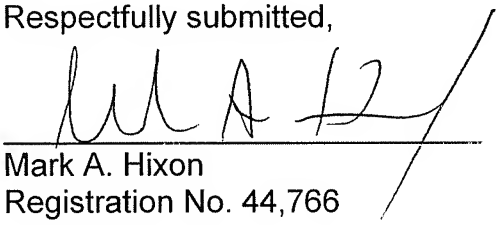
In summary, amended claims 30 to 39 are believed to be both non-obvious over the applied references Cheng and Littleton and any reasonable combination thereof. In view of the above, reconsideration and withdrawal of the present rejection are respectfully requested.

SUMMARY

For the reasons above, it is submitted that the independent claims are allowable over the applied art of record. The remaining claims are believed to be allowable based, at least, upon their dependence from allowable base claims as shown above.

Should the Examiner wish to modify any of the language of the claims, applicants' attorney suggests a telephone interview in order to expedite the prosecution of the application.

Respectfully submitted,



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